Application Serial No: 10/774,644
In reply to Office Action of 29 June 2005

Attorney Docket No 84816

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to FIG. 1. In FIG. 1, duplicate item "36" has been replaced by previously omitted item "38".

Attachment: Replacement sheet labeled FIG. 1

Annotated Sheet Showing Changes to FIG. 1

REMARKS / ARGUMENTS

Claims 1-18 are currently pending in the application. No claims are allowed. Claims 3, 13, 14 and 15 are cancelled without prejudice or disclaimer by this response. Claims 1, 5, 12 and 16 have been amended by this response.

Numeral "38" listed on page 7 line 29 is not shown in the drawings.

Claim 16 is objected due to the use of "capable of" in lines 24 and 28. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bateman [2003/0001084] in view of Miller [2005/0051719]. As per claims 1,3,5,8, Bateman [2003/0001084] teaches a method for analyzing a sample using ion mobility spectrometry, the method comprising: pulsing an ion gate located at one end of a drift tube during a pre-determined scan time using a temporally spaced pattern comprising a plurality of ion admitting periods and a plurality of ion repelling periods, each ion admitting period representing a distinct length of time; generating a time dependent mobility spectrum associated with the sample based upon the voltage induced by a plurality of

sample ions passing into the drift tube during the admitting periods and striking an ion detector disposed at a second end of the drift tube opposite the first end. See Bateman [2003/0001084] figs. 1,3b-11b, abstract, paragraphs [0006,0009-0011,0015,0017-0019,0026-0029,0031-0035,0072-0075,0085-0086,0089,0092-0095,0098,0102,0104,0108,0117,0119] and claims 28-30,46,59. However, Bateman [2003/0001084] does not explicitly state, processing the mobility spectrum to produce a distinct signature associated with the sample. Miller [2005/0051719] does teach processing the mobility spectrum to produce a distinct signature associated with the sample. Miller [2005/0051719] also teaches the length of time associated with each admitting period corresponding to a unique admission frequency and the processing further comprises evaluating the mobility spectrum using one or more statistical evaluators, and the distinct signature being associated with the sample to at least one known agent signature to determine if the distinct signature matches the known agent signature. See Miller [2005/0051719] abstract, figs.1-2b, 5, 7-16, 19, 21-30, 35, 43 paragraphs [0009-0012,0014,0016,0018-0023,0053-0054,0074-0078,0100,0117,0127,0133,0149,0172-0180,0189-0192,0215-0216,0244,0260,0289,0311] and claim 20. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to processing the mobility

spectrum to produce a distinct signature associated with the sample in order to aid in identifying individual constituents.

As per claim 2, Bateman [2003/0001084] in view of Miller [2005/0051719] teach all aspects of the claim except for explicitly stating that the sum of the distinct lengths of time equals 50% of the predetermined scan time. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the sum of the distinct lengths of time equal 50% of the predetermined scan time, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum of working ranges involves only routine skill in the art.

As per claim 4, Bateman [2003/0001084] in view of Miller [2005/0051719] teach all aspects of the claim except for explicitly stating decreasing the length of time associated with each admitting period as the corresponding admission frequency increases. It would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the length of time associated with each admitting period as the corresponding admission frequency increases since it was known in the art that as time decreases, frequency increases according to the formula; frequency = 1/time.

As per claims 6-7, Bateman [2003/0001084] in view of Miller [2005/0051719] teach all aspects of the claim except for

explicitly stating five statistical evaluators being used and that the five evaluators comprise average, standard deviation, maximum, minimum, and covariance. It would have been obvious to one of ordinary skill in the art to have five statistical evaluators be used and have the five evaluators comprise average, standard deviation, maximum, minimum, and covariance; since it is well known in the art to use these evaluators for evaluating measurements.

Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bateman [2003/0001084] in view of Miller [2005/0051719] and further in view of Wright [2004/0018519]. As per claims 9-17, Bateman [2003/0001084] in view of Miller [2005/0051719] teach all aspects of the claims except for explicitly stating that training a neural network using known agents, and using a fuzzy decision maker to analyze one or more sample signatures to identify one or more known agent signatures corresponding to each sample signature. Wright [2004/0018519] does teach training a neural network using known agents, and using a fuzzy decision maker to analyze one or more sample signatures to identify one or more known agent signatures corresponding to each sample signature. See Wright [2004/0018519] abstract, figs.1, 6-7, paragraphs [0010-0011,0016,0020,0054-0057,0092,0129-0132,0135,0138,0152,0157],and claims 1,55-57,122. Therefore, it would have been obvious to a

person of ordinary skill in the art at the time the invention was made to train a neural network using known agents, and using a fuzzy decision maker to analyze one or more sample signatures to identify one or more known agent signatures corresponding to each sample signature in order to detect, and identify dangerous substances and record and later identify new substances.

As per claim 18, Bateman [2003/0001084] in view of Miller [2005/0051719] and further in view of Wright [2004/0018519] teach all aspects of the claim except for explicitly stating the ion gate controller comprises a transistor-transistor logic level clock source. Bateman [2003/0001084] does, however, teach pulsing ions through the ion gate. See Bateman [2003/0001084] paragraph [0092]. Therefore, it is inherent that the ion gate would be connected to a timing device and therefore would provide an equivalent function.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. and Published Patent Applications 5,162,652 to Cohen et al, 5,340,983 to Deinzer et al, 2003/0176804 to Melker, 2005/00611967 to Shvartsburg et al, 2003/0052263 to Kaufman et al, and 2003/0114986 to Padmanabhan et al are considered pertinent to the applicants' disclosure. Cohen [5,162,652] is considered pertinent due to its discussion on a method and apparatus for rapid detection of contraband and toxic materials

by trace vapor detection using ion mobility spectrometry. Deinzer [5,340,983] is considered pertinent due to its discussion on a method and apparatus for mass analysis using slow monochromatic electrons. Melker [2003/0176804] is considered pertinent due to its discussion on a method and apparatus for monitoring respiratory gases during anesthesia. Shvartsburg [2005/0061967] is considered pertinent due to its discussion on pattern recognition of whole cell mass spectra. Kaufman [2003/0052263] is considered pertinent due to its discussion on a system for collection of data and identification of unknown ion species in an electric field. Padmanabhan [2003/0114986] is considered pertinent due to its discussion on architectures of sensor networks for biological and chemical agent detection and identification.

These rejections and objections are respectfully traversed in view of the amendment herein and remarks that follow.

In the Office Action, it was noted that numeral "38" is listed in the specification but not shown in the drawings. In response, ion gate controller 38 was improperly marked on Fig. 1 as item "36". An annotated sheet deleting "36" and a replacement sheet adding "38" now reflects the proper configuration for Fig. 1.

In the Office Action, claim 16 was objected to, for the use of "capable of". In response, the language "capable of" has been removed with the limiting language "generating a time dependent mobility spectrum based upon the voltage induced by a plurality of sample ions passing into the drift tube during the admitting periods and striking the ion detector" remaining. As a result, the objection of the Office Action is traversed for this claim.

In the Office Action, claims 1-8 were rejected under 35 USC 103(a) as being unpatentable over Bateman [2003/0001084]in view of Miller [2005/0051719]. In response, claim 3 has been cancelled without prejudice or disclaimer. Therefore, the rejection of the Office Action is traversed for this claim.

In regard to claim 1, the claim has been amended to recite pulsing an ion gate located at one end of a drift tube during a pre-determined scan time using a temporally spaced pattern comprising a plurality of ion admitting periods and a plurality of ion repelling periods, each ion admitting period representing a distinct length of time corresponding to a distinct admission frequency. By spacing each admitting period to a distinct length of time in response to a distinct admission frequency, the lengths of time can be selected based on associated frequencies to result in an overall duty cycle swept over a range of frequencies. The result is that the sum of all

distinct lengths of time can equal 50% of the total scan time. By increasing the amount of useful scan time, the system and method of the present invention can utilize significantly more of the sample product ions generated during ionization. A resulting advantage is the ability to use low concentrations of samples for testing, thereby reducing testing costs and enhancing availability of test samples.

In contrast to the present invention, the Bateman reference recites temporally separating some of the ions according to their ion mobility (See Para 0006). The ions in the spectrometer may be subjected to an electric field so that the different species of ion acquire different velocities and are temporally spaced according to their own ion mobility. The period of time is set that only ions having a desired mass to charge ratio … are onwardly transmitted (See Para 0017). This temporal situation based on ion mobility is repeated in the paragraphs of the Bateman reference cited in the Office Action.

As such the temporal situation in the cited reference is a result reflecting an existing ion mobility state. The system and method of the present invention is a controlled temporal action corresponding to a distinct admission frequency. As a result, the Bateman reference neither teaches nor suggests the controlled temporal action of the present invention and it would not be obvious to one skilled in the art to combine the cited

reference with the Miller reference. As such, the rejection of the Office Action for claim 1 and dependant claims 2 and 4-8 is traversed.

It is also noted that claim 5 has been amended to remove alternative language from the claim.

In the Office Action, claims 9-18 were rejected under 35 USC 103(a) as being unpatentable over Bateman [2003/0001084]in view of Miller [2005/0051719] and further in view of Wright [2004/0018519]. In response, claims 13, 14 and 15 have been cancelled without prejudice or disclaimer. Therefore, the rejection of the Office Action is traversed for these claims.

In regard to claim 9-12, claim 1, upon which the claims depend, has been amended to recite pulsing an ion gate located at one end of a drift tube during a pre-determined scan time using a temporally spaced pattern comprising a plurality of ion admitting periods and a plurality of ion repelling periods, each ion admitting period representing a distinct length of time corresponding to a distinct admission frequency. By spacing each admitting period to a distinct length of time in response to a distinct admission frequency, the lengths of time can be selected based on associated frequencies to result in an overall duty cycle swept over a range of frequencies.

In contrast to the present invention, the Bateman reference recites temporally separating some of the ions according to

their ion mobility (See Para 0006). This temporal situation based on ion mobility is repeated in the paragraphs of the Bateman reference cited in the Office Action. As such the temporal situation in the cited reference is a result reflecting an existing or desired ion mobility state. The system and method of the present invention is a controlled temporal action corresponding to a distinct admission frequency.

As a result, the Bateman reference neither teaches nor suggests the controlled temporal action of the present invention and it would not be obvious to one skilled in the art to combine the cited reference with the Miller and Wright references. As such, the rejection of the Office Action for claim 1 and dependant claims 9-12 is traversed.

Claim 12 has been amended to remove alternative language from the claim.

In regard to claim 16-18, claim 16, upon which claims 17 and 18 depend, has been amended to recite pulsing an ion gate using a temporally spaced pattern comprising a plurality of ion admitting periods and a plurality of ion repelling periods, each ion admitting period representing a distinct length of time corresponding to a distinct admission frequency. By spacing each admitting period to a distinct length of time in response to a distinct admission frequency, the lengths of time can be

selected based on associated frequencies to result in an overall duty cycle swept over a range of frequencies.

In contrast to the present invention, the Bateman reference recites temporally separating some of the ions according to their ion mobility (See Para 0006). This temporal situation based on ion mobility is repeated in the paragraphs of the Bateman reference cited in the Office Action. As such the temporal situation in the cited reference is a result reflecting an existing or desired ion mobility state. The system and method of the present invention is a controlled temporal action corresponding to a distinct admission frequency.

As a result, the Bateman reference neither teaches nor suggests the controlled temporal action of the present invention and it would not be obvious to one skilled in the art to combine the cited reference with the Miller and Wright references. As such, the rejection of the Office Action for claim 16 and dependant claims 17 and 18 is traversed.

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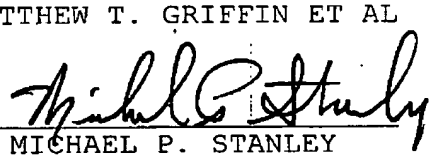
In view of the Remarks above, the Applicants respectfully request reconsideration and allowance of the application.

The Examiner is invited to telephone Michael P. Stanley, Attorney for Applicant, at 401-832-4736 if, in the opinion of the Examiner, such a telephone call would serve to expedite the prosecution of the subject patent application.

Respectfully submitted,
MATTHEW T. GRIFFIN ET AL

18 November 2005

By 
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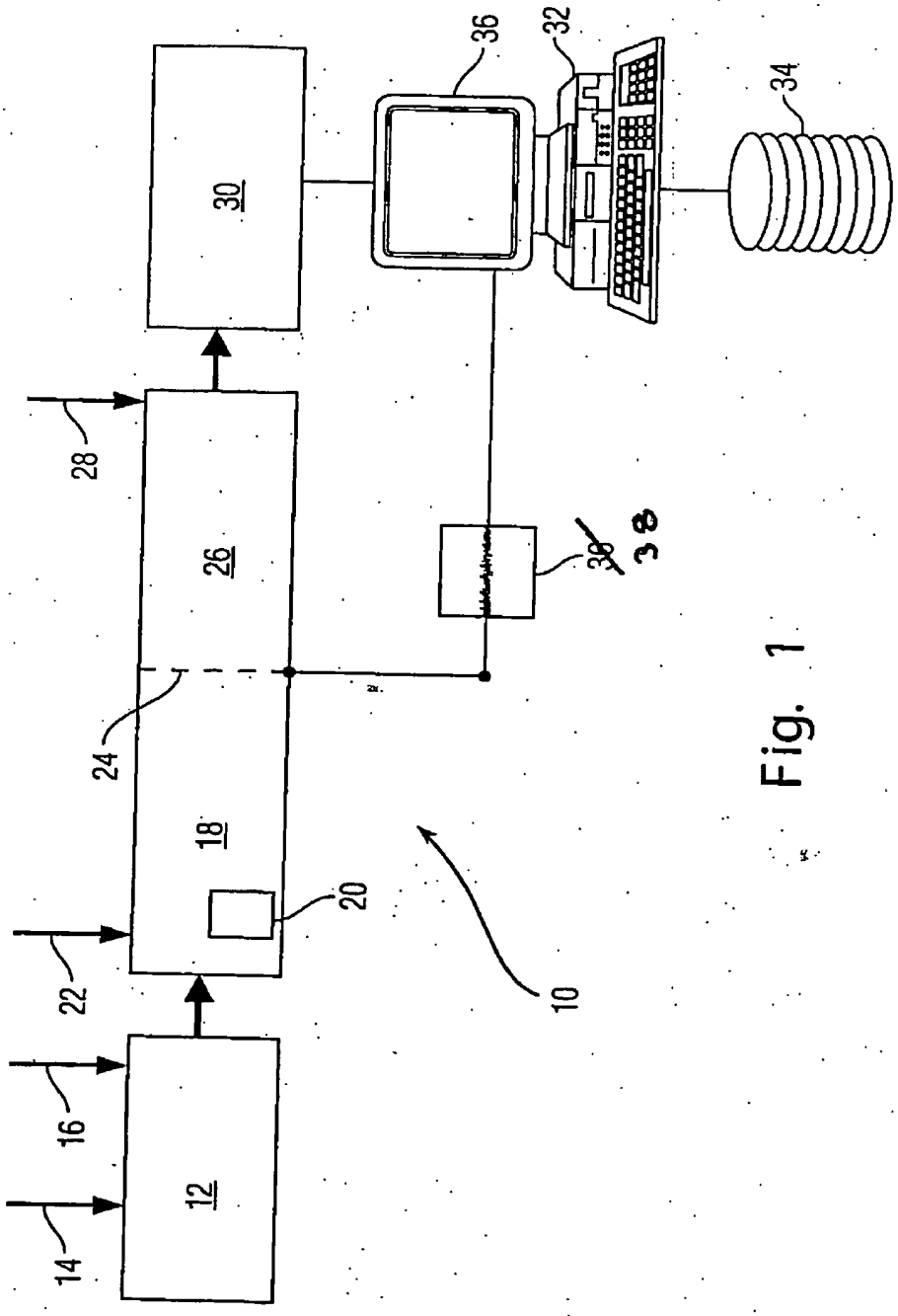

Fig. 1

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